

Work Order ID 121799

Wednesday, July 02, 2014 3:35:00 PM

121799

Page 1

Item ID: D407-649-011 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Hardpoint
 Start Date: 6/25/14 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 7/09/14 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: MLS Date: 14-07-03 Tooling: _____ Date: _____
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____
 Run Start ***NR1***
 Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr	
N/A	Rev N/A	<u>sel</u>

100	Document Control	0.00							
100	DOCUMENT CONTROL								
DC	Memo	0.00							
Doc.Control -USB or Paperwork	Photocopy blue file D407-649 and type labels per QSI 014		CHG001						

MAR 05 2015

DAS
06
9-89

110	Pick Kit	0.00							
110									
Packaging	Memo	0.00							
Packaging									

DAS
46
9-89

FEB 26 2015

DAS
28
9-89

120	QC4- 100% Inspect kits for completeness	0.00							
120									
QC	Memo	0.00							
Quality Control									

MAR 05 2015

DAS
06
9-89

Ship BOMARS

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Crosstube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Design											
Doc/Data											
Equip/Tooling											
Handling/Pre											
Material											
Operator											
Offset/Setup											
Process											
Supplier											
Training											
Transport											
Unapproved											

FAULT CATEGORY			
Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other

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Page 2

Item ID: D407-649-011 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Hardpoint
Start Date: 6/25/14 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 7/09/14 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130		0.00							
130	Packaging								
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D407-649-011 Location: _____ PPP Rev: _____								
	<i>SHIP</i>								
140	QC21- Final Inspection - Work Order Release	0.00							
140									
QC	Memo	0.00							
Quality Control									

MCS 15-03-06

u 15-03-06

DAS
06
3-09

MAR 05 2015

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Crosstube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐
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Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Picklist Print

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Page 1

Work Order ID: 121799

121799

Parent Item: D407-649-011

D407-649-011

Parent Item Name: Hardpoint

Start Date: 6/25/14

Required Date: 7/09/14

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:B98.12.07Changed location for step 2DM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

80-007-15-4A

Purchased

No

120

Each

2.0000

24

24

DAS

80-007-15-4A

Insert

**** 22x m129865**

46

9-89

DAS
28
9-89

DAS
06
9-89

Location

Loc Qty

Loc Code

ST394

2

121500

2

(2x)

AN4-6A

Purchased

No

120

Each

2,305.000

24

24

DAS

AN4-6A

BOLT

**** ✓**

46

9-89

DAS
28
9-89

DAS
06
9-89

Location

Loc Qty

Loc Code

ST355

604

16067

4

M128403

600

ST514

1701

M126317

350

M128634

1351

(24x)

D2713

Manufactured

No

120

Each

8.0000

4

4

DAS

D2713

Hardpoint Lug

**** ✓**

46

9-89

DAS
28
9-89

DAS
06
9-89

Location

Loc Qty

Loc Code

Mezz

1

36699

1

ST479

7

82667

7

(4x)

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td>Skid-tube ☐</td> <td>Crosstube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐															
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐															
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐															
Large Fab ☐	Composite ☐	Supplier ☐																

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Picklist Print

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Page 2

Work Order ID: 121799

121799

Parent Item: D407-649-011

D407-649-011

Parent Item Name: Hardpoint

Start Date: 6/25/14

Required Date: 7/09/14

Start Qty: 1.00

Required Qty: 1.00

D2755-1

Manufactured No

120

Each

11.0000

1 1

D2755-1

Hardpoint Lug

**

DAS
46

9-89

DAS
28
9-89

Location

Loc Qty

Loc Code

ST482

11

17551
79531

2
9

(1x)

DAS
86
9-89

D2755-2

Manufactured No

120

Each

12.0000

1 1

D2755-2

Lug

**

DAS
46

9-89

Location

Loc Qty

Loc Code

ST479a

12

17552
48383

2
10

(1x)

DAS
86
9-89

D2756

Manufactured No

120

Each

13.0000

6 6

D2756

Inner Doubler

**

DAS
46

9-89

Location

Loc Qty

Loc Code

ST010

13

109467
77745
82549

6
5
2

(5x)

DAS
86
9-89

D2757

Manufactured No

120

Each

22.0000

6 6

D2757

Outer Doubler

**

DAS
46

9-89

Location

Loc Qty

Loc Code

ST010

22

109790
9235

21
1

DAS Not in system
86
9-89

DAS
28
9-89

Wednesday, July 02, 2014 3:34:59 PM

Shop Packet Print

Page 2

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Crosstube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐
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Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
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Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
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Picklist Print

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Page 3

Work Order ID: 121799

121799

Parent Item: D407-649-011

D407-649-011

Parent Item Name: Hardpoint

Start Date: 6/25/14

Required Date: 7/09/14

Start Qty: 1.00

Required Qty: 1.00

M7885/2-4-1

Purchased No

120 Each

24.0000

96 96

M7885/2-4-1

Rivet

**

m131198 (72x)

DAS

46

9-89

DAS
06
9-89

Location

Loc Qty

Loc Code

ST260

24

110267

24

M7885/3-4-2

Purchased No

120 Each

218.0000

126 126

M7885/3-4-2

Rivet

**

(24x)

DAS

28

9-89

DAS
06
9-89

Location

Loc Qty

Loc Code

ST260

218

110267

218

NAS1149D0463J

Purchased No

120 Each

7,578.000

24

NAS1149D0463.J

WASHER

**

(126x)
24

DAS

28

9-89

DAS
06
9-89

Location

Loc Qty

Loc Code

ST277

7578

121912

12

16941

8

M126221

20

M127813

22

M127904

915

M128591

101

M128995

1500

M129390

5000

(24x)

DAS

28

9-89

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order: _____ Part No. _____ NCR No. _____				DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Crosstube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
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Material											
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Process											
Supplier											
Training											
Transport											
Unapproved											

FAULT CATEGORY				
Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other	

Ref



DAS
CS
9-69

6 PARTS LIST

Qty	Part Number	Description
X	D407-649-011	407 HARDPOINT KIT INSTALLATION
4	D2713	BRACKET
1	D2755-1	AFT BRACKET LH
1	D2755-2	AFT BRACKET RH
6	D2756	INNER DOUBLER
6	D2757	OUTER DOUBLER
96	M7885/2	RIVET
126	M7885/3	RIVET
24	AN4-6A	BOLT
24	AN960JD416	WASHER
24	80-007-15-4A	INSERT - DOME HEAD

7 HARDPOINT LOAD LIMITS (REFERENCE ONLY)

The maximum limit loads on the Hardpoint Kit are 500 lb vertical load and 280 lb radial horizontal load for each individual hardpoint. The radial horizontal and vertical loads may be applied simultaneously. Any equipment attached to the hardpoints **shall not exceed these loads**.

8 CARGO HOOK LIMITATIONS (REFERENCE ONLY)

Loads applied to the Dart Hardpoint Kit Installation will limit the load carrying capacity of the cargo hook according to the following Figure. When the hardpoints are loaded to their maximum capacity, outlined in section 7 of this document, the cargo hook is limited to carrying a maximum load of 1850 lb.

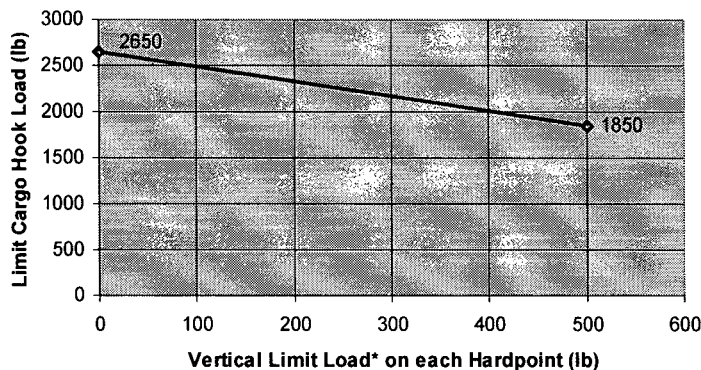


Figure 5 - Cargo Hook Limitations for Hardpoint Loads

* The Vertical Limit Load on each Hardpoint refers to the maximum allowable vertical limit load for a single hardpoint only. The 500 lb vertical limit load indicated in Figure 5 implies a maximum radial horizontal load of 280 lb, according to section 7 of this document. These limit loads should not be exceeded.



DESIGN <i>KE</i>	DRAWN BY <i>CP</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>KE</i>	APPROVED <i>[Signature]</i>	DRAWING NO. DSI 9114	REV. A SHEET 1 OF 1
DATE 98.11.03		TITLE 407 HARDPOINT KIT	SCALE NTS
A	98.11.03	NEW ISSUE	

DART SERVICE INSTRUCTION

AMEND DART INSTALLATION INSTRUCTIONS IIN-D407-649 REV. B

STA: SH98-18
STC: SR00895NY

DETAILS OF THE CHANGES TO THE PARTS LIST ON **PAGE 8** OF
INSTALLATION INSTRUCTIONS IIN-D407-649 REV. B ARE OUTLINED BELOW:

CHANGE:

96	M7885/2	RIVET
126	M7885/3	RIVET
24	80-007-15-4A	INSERT - DOME HEAD

TO:

/ 96	M7885/2-4-1	RIVET
126 /	M7885/3-4-2	RIVET
24	80-007-15-4A or SL3149-4A-15 or K100H4A95-15 or FT5215-12A-15 or FIT7623-4A-15	INSERT - DOME HEAD